

THE DISTRIBUTION OF HEMIARGUS ISOLA (REAKIRT) EAST OF THE MISSISSIPPI RIVER.

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In the February, 1939, issue of the *Bulletin of the Brooklyn Entomological Society*, G. W. Rawson and John S. Thomas published an article entitled "The Occurrence of *Hemiargus isola* (Reakirt) in Northern Ohio." The article closed with the remark that further information on the occurrence of this butterfly so far from its previously supposed range should prove interesting. It does.

That same year, on October 19, the author was surprised to capture a perfect male of *H. isola* at Principia College near Elsay, Jersey County, Illinois. This capture, coupled with the aforementioned article led the author to investigate further.

An examination of the better-known entomological publications revealed nothing further on the subject, so correspondence was commenced with collectors throughout the area between the Appalachian region and the Mississippi River. The interesting results are now at hand.

The author has received the data of twenty-eight specimens of *Hemiargus isola* captured in the states of Illinois, Wisconsin, Indiana, Ohio, and Michigan, all far from the previously suspected range of this species.

The published record of three specimens of *H. isola* taken in the "Oak Openings" at Holland, near Toledo, Ohio, is supplemented by the capture of a fresh male at Sylvania, Ohio, on the edge of the "Openings" on September 2, 1939. It is in the collection of Donald Eff of Sylvania. This still leaves the "Oak Openings" as the only known northern Ohio locality for *H. isola*. However, Mr. S. B. Smalley and a friend took six fresh specimens in the fall of 1937 around Cincinnati, in southern Ohio.

The Michigan record of *H. isola* is a single specimen taken by Dr. F. M. Case in Allegan County, Michigan, at Round Lake, about a hundred miles northeast of Chicago, Illinois. All Indiana specimens are from the dune district near Gary. Three individuals were taken there, one at Hessville in 1911, and two at Miller in 1925. The Wisconsin capture is a battered specimen netted by H. M. Bower several years ago at Wauwatosa, Illinois, being nearest to the usual range of *H. isola*, contributes the most instances of occurrence east of the Mississippi. The author's specimen from Principia College, on the Mississippi River has already been noted.

A. G. Lauck took one a few miles away at Pere Marquette State Park and another at Eldred in adjacent Greene County in 1936 and 1937 respectively. In 1901 a fresh pair was taken thirty miles south of Principia College at Falling Springs by C. L. Heink.

Aside from these five taken in central-western Illinois, all other Illinois records are from the dune district near Chicago. Dr. John A. Comstock writes that he took several *H. isola* around Evanston prior to 1900. A male was taken in Chicago proper in 1917, two were taken at Elgin, and one at Arlington Heights in 1934, and two at Zion (in 1914 and 1934).

In surveying this and other data, it is seen that all available records are from four main spots: (1) the dune region in a crescent-shaped area around the southern end of Lake Michigan; (2) the dunes at "Oak Openings" in Ohio; (3) the vicinity of Cincinnati; and (4) the vicinity of Principia College near Alton, Illinois. It appears probable that thorough collecting would fill in these gaps between the corners of a rough square. The present spottiness is due very likely to insufficient coverage of the area. It should also be pointed out that *H. isola* often passes unnoticed by collectors since it resembles the abundant *Everes comyntas* (Godart) on the wing.

Extensive correspondence with entomologists east of the Mississippi and south of Cincinnati has revealed no occurrences of *Hemiargus isola* in the South. A related species, *Hemiargus hanno* (Stoll), occurs at least as far west as Mobile, Alabama. It may be that *H. isola* reaches eastern Louisiana from Texas, but the other southern states are presumed to be out of even the accidental range.

The periods of flight of *H. isola* east of the Mississippi River are somewhat uncertain. I have before me records of fresh specimens taken in every month from March through October. The March examples are from the eastern edge of Missouri, a short distance across the state line from Principia College. On March 24, 1907, at least ten perfect specimens including both sexes of *H. isola* were taken by C. L. Heink at this locality near the Illinois state line. This instance is cited because of the proximity to the area dealt with in this paper.

Three broods are represented, and in Jersey County, Illinois and at Cincinnati, Ohio, the heights of flight appear to be these:

- First brood—early April
- Second brood—late June
- Third brood—late September

In the more northern localities (around Chicago and near Toledo), these broods each seem to be two to three weeks later. During some years, the seasons are later or earlier by a week or two than the above dates, as is clearly shown in the records at hand.

With the data of the known captures of *H. isola* set forth, the question arises: What is the explanation of the surprising appearance of Reakirt's Blue east of the Mississippi River. Here is an hypothesis containing an answer to the problem: It appears that *Hemiargus isola* is a common butterfly from the Pacific Coast to a north-south line running through Omaha, Nebraska and Kansas City, Kansas. In the states of Iowa, Missouri, and Arkansas it is of spasmodic occurrence, though present as a breeder, not a migrant. From the Mississippi River to the states of Michigan, Ohio, and probably Kentucky it is very rare, though certainly a breeder in these states. Within this last region there are certain well established colonies in sand dune habitats. The only two of these dune colonies known at present are at "Oak Openings" in Ohio, and around Chicago, but *Hemiargus isola* is to be expected in other such localities. With the exception of the dune colonies, the butterfly is a very rare, but widely distributed insect.

Even in its citadels in the Great Plains and California, the food plants of *Hemiargus isola* still remain unknown. When this is known, it seems likely that the plant will be found to be common in the dune regions and very uncommon elsewhere in the East. The almost invariable captures of fresh, perfect males and females of the delicate Lycaenid rules out the probability of movement, either migrational or wind-propelled.

Before the subject of the eastern occurrence of *Hemiargus isola* can be closed, two more things must be done: (1) the food plant must be determined; and (2) careful examination of all Lycaeninae must be made in the field in order to sift out specimens of the rare *H. isola*. The latter should fill in the area covered by this paper.